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APPENDIX

1. (currently amended): An adaptive motion estimation method, the motion estimation method comprising the steps of:

(a) inputting a frame in units of macro blocks and a search area, and estimating candidate motion vectors for a macro block desired to be estimated; and

(b) if an error of the candidate motion vectors estimated in step (a) is in a threshold range, estimating motion in a restricted search area centered on the estimated location, and otherwise, estimating motion in the whole of said search area,

wherein step (b) further comprises the sub-steps of:

(b-1) if an error of the estimated candidate motion vector is within the threshold range, performing a one-pixel greedy search (OPGS) algorithm; and

(b-2) otherwise, performing a hierarchical search block matching algorithm (HSBMA).

2. (original): The motion estimation method of claim 1, wherein a zero motion vector, a median of motion vectors of neighboring macro blocks, and a value estimated from the previous or next frame are generated, and a candidate motion vector is obtained by selecting a value best matching the macro block desired to be estimated, among the three values.

3. (canceled).



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4. (original): The motion estimation method of claim 1, wherein the threshold in step (b) is adjusted by estimating an encoding time for the current frame at each slice unit corresponding to the macro block group, based on a target encoding time calculated in advance.

5. (currently amended): The motion estimation method of claim 31, wherein by using a spiral search in step (b-2), the HSBMA compares a motion vector matching degree with an allowable error range selected according to an estimated encoding time among preset thresholds at each search stage, and selects the compared value within said range as a motion vector.

6. (currently amended): An adaptive motion estimation apparatus, comprising:
a vector estimation unit for receiving video data, and estimating a motion vector for a macro block desired to be estimated, by selecting from among a zero motion vector, the previous motion vector, and motion vectors of neighboring blocks, as a candidate motion vector;

an algorithm selecting unit for selecting a motion estimation algorithm by comparing an error between the candidate vector and a preset threshold; and

a motion estimation unit for estimating motion within a restricted search area, centered on an estimated location, if an error in the candidate motion vector is in a threshold range, and otherwise, estimating motion in a whole search area,

wherein the motion estimation algorithm comprises at least one of a one-pixel greedy search algorithm and a hierarchical search block matching algorithm.



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7. (original): The motion estimation apparatus of claim 6, further comprising: a half pixel motion estimation unit for estimating half pixel motion, referring to the location of the estimated value estimated by the motion estimation unit.

8. (currently amended): An adaptive motion estimation processing method comprising:
selecting a portion of received image data to be processed;
determining respective correlations between the selected portion and each of a zero motion vector, a previous motion vector and a motion vector corresponding to neighbor blocks;
and

selecting one of a plurality of motion estimation algorithms based on the respective correlations,

wherein the plurality of motion estimation algorithms comprise one or more of a one-pixel greedy search algorithm and a hierarchical search block matching algorithm.

9. (canceled).

10. (previously presented): An adaptive motion estimation processing method as claimed in claim 8, wherein a method for calculating the motion vector corresponding to neighbor blocks comprises determining a median value of motion vectors corresponding to one or more neighbor blocks of the received image data, wherein each of the neighbor blocks are positioned in a location within the image data other than a location of the selected portion.

11. (currently amended): A motion estimation processing device comprising:



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a first selection portion operable to select a portion of received image data to be processed;

a determining portion operable to determine respective correlations between the selected portion and each of a zero motion vector, a previous motion vector and motion vectors corresponding to neighbor blocks; and

a second selection portion operable to select one of a plurality of motion estimation algorithms based on the respective correlations,

wherein the plurality of motion estimation algorithms comprise one or more of a one-pixel greedy search algorithm and a hierarchical search block matching algorithm.

12. (canceled).

13. (previously presented): A motion estimation processing device as claimed in claim 11, further comprising a computation unit operable to determine a median value of motion vectors corresponding to one or more neighbor blocks of the received image data, wherein each of the neighbor blocks are positioned in a location within the image data other than a location of the selected portion.